In the claims:

All pending claims are set forth here. Amend claims 1, 6 and 9-12 to read as follows. Claims 2, 5, 7-8 and 13-47 are canceled.

1 (currently amended). A composite structure, comprising:

a porous substrate comprising a selected substrate material and having a substrate coefficient of thermal expansion;

a first layer integrated with an exposed surface of the substrate, wherein the first layer material comprises between 5 percent and 70 percent tantalum disilicide, between 1 percent and 30 percent molybdenum disilicide, and between 10 percent and 95 percent borosilicate glass , and a second layer of material ~~comprises at least first and second sub-layers~~, with the first ~~sub-~~layer being positioned adjacent to and between the substrate exposed surface and a second layer with material composition different from the first layer, the second ~~sub-~~layer, with the first and second ~~sub-~~layers and the substrate forming a functionally gradient system ~~in which the second sub-layer impregnates the first sub-layer and the first sub-layer impregnates the substrate~~ that gradually transitions from a first composition in the substrate to a second composition in the first layer and from the second composition in the first layer to a third composition in the second layer;

wherein the first ~~sub-~~layer material comprises a first non-zero percentage of tantalum disilicide, a second non-zero percentage of molybdenum disilicide and a third non-zero percentage of borosilicate glass, the second ~~sub-~~layer material comprises a fourth non-zero percentage of tantalum disilicide, a fifth non-zero percentage of molybdenum disilicide and a sixth non-zero percentage of borosilicate glass, and

wherein the first, second and third percentages are chosen so that a coefficient of thermal expansion of the first ~~sub-~~layer is substantially the same as the substrate coefficient of thermal expansion, and

wherein the fourth, fifth and sixth percentages are chosen to provide a protective layer when exposed to temperatures up to at least 3000 °F and are chosen to provide a coefficient of thermal expansion for the second ~~sub-~~layer for which the thermal expansion coefficient difference for the functional gradient first ~~sub-~~layer and ~~the~~ second ~~sub-~~layer is smaller than <u>a difference that would be present between</u> the coefficients of thermal expansion for the first ~~sub-~~layer and for the second ~~sub-~~layer <u>in the absence of the functional gradient first layer and second layer</u>.

2 (canceled).

3 (previously presented). The composite structure of claim 1, wherein said <u>layer</u> further comprises a processing aid.

4 (previously presented). The composite structure of claim 3, wherein said processing aid comprises silicon hexaboride.

5 (canceled).

6 (currently amended). The composite structure of claim 1, wherein <u>said first layer</u> comprises between 10 percent and 65 percent tantalum disilicide, at least 5 percent molybdenum disilicide and between 20 percent and 45 percent borosilicate glass.

7-8 (canceled).

9 (currently amended). The composite structure of claim [[8]] 1, wherein said first ~~sub-~~layer ~~and said second sub-layer together~~ material impregnates said substrate to a depth of approximately 0.1 inches.

10 (currently amended). The composite structure of claim 1, wherein said substrate material is selected from the group consisting of a fibrous and open pore silica, silicon carbide, aluminosilicate, silicon oxycarbide and carbon substrates.

11 (currently amended). The composite structure of claim 1, wherein at least one component of said ~~coating~~ second layer has a particle size less than about 5 μm.

12 (currently amended). The composite structure of claim 1, wherein at least one component of said ~~coating~~ second layer has a particle size distribution having a maximum of approximately 5 μm and a mode of approximately 1 μm.

13-47 (canceled).